Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Unbundled Access to Network Elements	)	WC Docket No. 04-313
	)	
Review of the Section 251 Unbundling	)	
Obligations of Incumbent Local Exchange	)	CC Docket No. 01-338
Carriers	)	

JOINT DECLARATION OF STEPHAN DERODEFF, PATRICK BENNET, AND MARK RICHMAN ON BEHALF OF COVAD COMMUNICATIONS COMPANY

I. Witness Qualifications

1. My name is Stephan DeRodeff. I am the Vice President for Broadband Technologies for Covad Communications Company ("Covad"). My business address is 110 Rio Robles, San Jose, CA 95134. I am responsible for the management of the technology path of Covad's network infrastructure, including planning and implementation. I have extensive experience in designing and building carrier class networks for voice and data. Prior to joining Covad, I served as senior vice president at software start-up Cplane, Inc. My experience also includes leading facilities management, network engineering and network operations systems at U S West and product development and management at Oracle. I earned my B.S. in Electrical Engineering from the Massachusetts Institute of Technology.

2. My name is Patrick Bennett. I am the Executive Vice President for Product Development and Management for Covad Communications. My business address is 110 Rio Robles, San Jose, CA 95134. I am responsible for leading Covad's product

development and management teams. I am also responsible for leading Covad's Voice over IP (VoIP) and alternative last-mile initiatives to ensure Covad's continued leadership in broadband. Prior to joining Covad, I was senior vice president of marketing and product development for TESSCO Technologies, Inc., a leading provider of wireless communication solutions. In the years prior to my joining TESSCO, I was executive vice president and chief operating officer of Rogers Wireless, Inc., Canada's largest wireless communications service provider. Preceding Rogers Wireless, I held senior roles in sales and marketing at Sprint PCS, Cellular One, Communications Electronics, Inc., and American Beeper Associates.

3. My name is Mark Richman. I am the Chief Financial Officer for Covad. My business address is 110 Rio Robles, San Jose, CA 95134. I have over 18 years of financial management experience. Prior to joining Covad, I was vice president and CFO for MainStreet Networks. Before MainStreet, I held senior management positions at Adecco S.A. where I was vice president of finance and administration for Adecco U.S., a $3 billion operating division. I was also vice president and corporate treasurer at the parent company. I also have worked for Merisel, Inc., ING Capital, Manufacturers Hanover Trust Company and Wells Fargo Bank. I hold a B.S. degree in managerial economics from the University of California at Davis and a MBA from the Anderson School at UCLA.

II. Background on Covad

4. Covad is one of the nations' largest competitive telecommunications service providers, offering nationwide xDSL, T1, VoIP, Web hosting, managed security, IP and dial-up, and bundled voice and data services. Covad's broadband data services offer

consumers and businesses high speed connectivity over copper loops with data speeds that are several times faster than conventional dial-up modems. To offer service to its customers, Covad raised more than two billion dollars in debt and equity financing and constructed a nationwide facilities-based broadband network[1]. In addition to purchasing and deploying its own broadband equipment, Covad leases unbundled loops, the high frequency portion of the loop, dedicated interoffice transport and collocation space from ILECs around the country. With over 514,000 lines in service, Covad is one of the nation's largest users of standalone unbundled loops and line sharing network elements. Covad broadband services are currently available across the nation in 44 states and 235 Metropolitan Statistical Areas (MSAs) and can be purchased by more than 57 million homes and businesses, which represent over 50 percent of all US homes and businesses.

III. Covad's Network Architecture

5. Covad specifically relied upon the Commission's UNE rules in designing its network architecture. By way of background, Covad's network is structured as follows:

(A) Covad has collocated a digital subscriber line access multiplexer ("DSLAM") at each ILEC central office at which the loops of its target end users terminate;

(B) Covad creates hub locations by collocating ATM equipment at an ILEC central office that collects traffic from a group of central offices with a DSLAM;[2]

(C) Covad connects each of its DSLAMs to a hub central office with dedicated interoffice transport ("transport");

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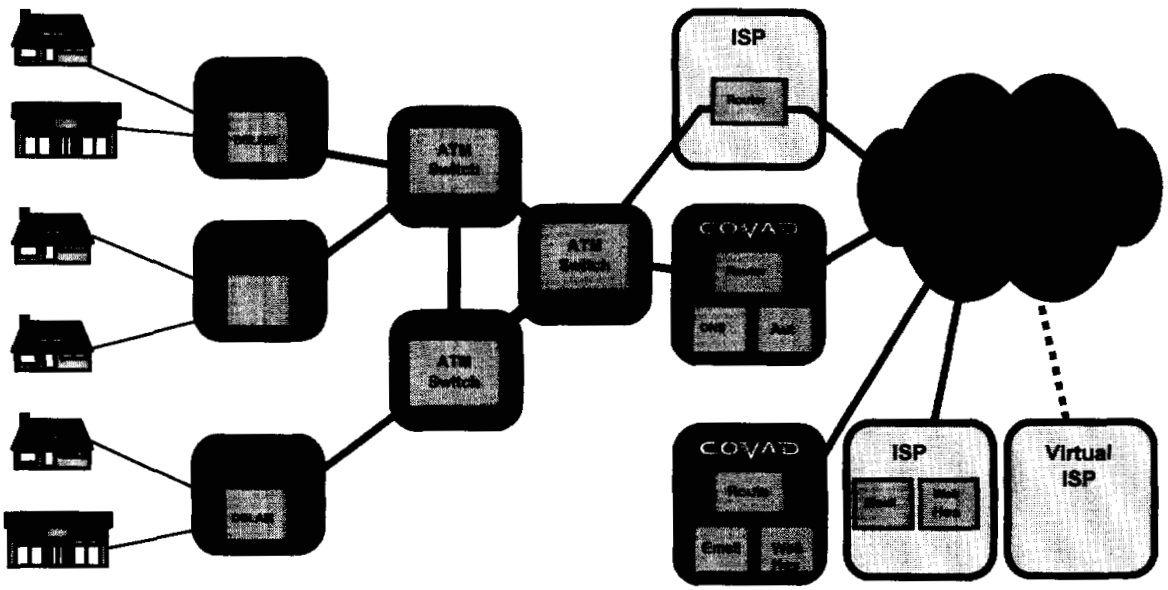
[1] Covad raised $1.4 billion in debt and $0.7 billion in equity.

[2] Covad determines the ratio of hubs (ATM equipment) to spokes (DSLAMs) through the use of a cost optimization algorithm, which weighs the transport and DSLAM costs against the cost of the ATM equipment. The actual number of DSLAMs per piece of ATM equipment varies throughout Covad's footprint.

(D) Covad interconnects its ATM equipment both within each region and between regions with transport; and

(E) Covad and its Internet service provider ("ISP") partners connect their IP Points of Presence ("POPs") to ATM equipment in one or more regions.



6. For purely illustrative purposes, Covad's network looks like the diagram above.

7. As the diagram makes plain, Covad's network is designed to aggregate traffic from a large number of central offices at hub locations. In determining what level of aggregation to use, Covad relied upon the availability of UNE transport. As the price of transport increases, so too does the value of aggregating traffic and thereby creating economies of scale. If the Commission were to take unbundled transport off the list of UNEs, Covad's network would no longer be efficient or viable. At worst, Covad would be left with no options to reach end offices in which it is currently collocated. At a minimum, Covad would need to deploy additional hubs in order to aggregate more traffic

and reduce its costs to transport each unit of traffic. An architecture with a large number of hubs would justify placing different (and smaller) ATM equipment because the traffic would be more distributed. Alternatively, if Covad did not add hubs, it would have to de-activate DSLAMs whose transport costs are too high (e.g., those serving residential customers), which means serving fewer customers in general and contracting Covad's business.

8. It would be undesirable and costly for Covad to reduce the size of its central office footprint. Covad has an obvious incentive to make its services available to as large an addressable market as is financially and technically feasible. Moreover, Covad does not relish the prospect of forcing end users to leave its network. Indeed, as described below, if Covad were left without access to unbundled transport at all, the effects on Covad's ability to continue providing service would be devastating. As described below, in such a circumstance, Covad would be unable to continue providing it current services profitably.

IV. Covad's Financial Model

9. In its previous comments to the Commission, Covad provided a breakdown of its monthly cost of providing service (total costs, excluding SG&A[3] expenses and capital investments[4]):

- ILEC loop costs are approximately 22% of monthly costs;
- ILEC dedicated transport costs are approximately 25% of monthly costs;
- ILEC collocation costs (including rent and power) are approximately 15% of monthly costs;

[3] Sales, General & Administrative ("SG&A") expenses.

[4] Capital expenses include the investment that Covad made in DSL equipment that it collocated in ILEC central offices.

- Covad's operations costs (e.g., salaries and related costs) are approximately 25% of monthly costs; and
- Other miscellaneous costs of service are approximately 13% of monthly costs.[5]

10. In addition, Covad's use of self-installation kits for line sharing customers has improved these numbers dramatically. When Covad had to install ADSL service for consumers over stand-alone loops, it cost approximately $150 for each dispatch (and often times more than one dispatch was necessary for individual consumers). Unlike line sharing, the installation of DSL over a standalone loop requires a dispatch for the ILEC to install the second loop, and for Covad to verify that the loop is connected back to the central office and that the service works properly. By contrast, with line sharing, a loop to the customer home is already in service and known to provide continuity back to the central office, because the customer is already obtaining voice service over the line. This enables the customer to initiate their DSL service by simply self-installing the necessary customer premises equipment. Because margins are so low on residential lines, the cost of dispatching to install residential orders prevented Covad from offering these services profitably, and the lack of line sharing would have forced Covad eventually to exit the residential broadband market entirely. As with ILECs, Covad can only deploy DSL profitably to residential customers if line sharing is available.

V. Line Sharing

11. For Covad, there are no alternatives to the ILEC's loop plant.[6] Contrary to the ILECs' arguments, cable, wireless and satellite facilities are not viable alternatives to

[5] *See JoshiDecl.* at ¶ 10.

DSL (for both residential and business customers). Moreover, recent events belie the Commission's belief in supposed alternatives to line sharing such as line-splitting. As demonstrated below, line sharing currently remains the only practicable means for Covad to compete in the residential and SOHO markets.

a. Lack of Alternative Intermodal Platforms

12. Starting with cable, it is hardly trivial to an independent broadband provider like Covad that cable providers do not lease their plant to other carriers, and thus is not available as an alternative to ILEC loop plant. The costs to Covad of placing new cable plant would be phenomenal (and not much different than replicating the ILEC's loop plant, which would cost hundreds of billions of dollars). Even if cable providers were willing to unbundle their equipment, cable is a fundamentally different service than DSL, as the next five paragraphs demonstrate. This also helps explain why retail DSL services offered by Covad are an important choice for consumers to have as an alternative to cable modem services.

13. First, because of the shared nature of cable modem networks, all data sent to or from a given subscriber is transmitted to all subscribers in the neighborhood. While measures can be taken to secure this data, security remains a primary concern, especially for business or home office users. By contrast, DSL networks operate on a point-to-point basis between the subscriber and the service provider and therefore do not present the opportunity for one subscriber to attempt to view another's traffic. Because of the shared nature of the cable system, Covad would have little control over the kinds of broadband services offered over cable. All of the users on a cable system get basically the same

[6] We should also note that it is often not possible to provide DSL service to residential consumers over a stand-alone loop (in lieu of line sharing) because many consumers have only one line coming to

broadband service. DSL service, by contrast, runs over loops that are dedicated to each end user and thereby allow the DSL provider to offer dramatically different network access services (including, but not limited to, access to the Internet and virtual private networks) to different customers. DSL providers differentiate their products through the available bandwidth (both upstream and downstream), the quality of service, and the manner in which traffic is prioritized, which would be difficult on a shared platform. For example, cable systems use DOCSIS and PacketCable rather than ATM, which do not provide the kind of quality of service ("QoS") that ATM offers. Distributed QoS, the cable industry's proposed standard for providing high quality VoIP services, falls short of ATM in this respect. Uplink packet fragmentation, which is necessary to reduce jitter on PacketCable, reduces the effective speed of cable networks even further.

14. Second, cable modem service is generally not available to businesses. When cable providers originally wired cities, they went after residential customers. For the most part, they did not wire commercial centers. On the other hand, Covad can provide a variety of business-class broadband services[7] to small business customers using DSL because they all have telephone lines.

15. Third, in any event, cable plant generally does not provide the kind of upstream bandwidth that small business demands. Cable modem services are biased toward downloading, which meets the typical usage pattern of residential customers using the service for recreation purposes. Cable services are also inadequate for telecommuters, who are residential customers that often require high upload speeds.

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their home.

[7] Business class competitive broadband service is an always-on Internet connection providing a minimum guaranteed bandwidth of 384 kbps both up- and downstream and priced at approximately $350/month (as opposed to roughly $1000/month for a T-1 service).

16. Fourth, cable plant does not provide a dedicated circuit in the manner that DSL does. The bandwidth provided to each cable customer depends on the number of other users currently on the network in that neighborhood. DSL, by contrast, gives the customer dedicated bandwidth all the way to the central office. As a result, cable provides such a distinctly lower quality of service than DSL that the two truly are not technically comparable substitutes for one another.

17. Fifth, cable modem service in the past has been much less suitable than DSL for transmitting voice services. As the shared cable network becomes more congested, services that are sensitive to delay such as voice will become increasingly unreliable to the point where it may no longer be possible to provide toll quality voice services at all.[8]

18. As is true with cable, competitive fiber, over which competitors offer voice, data and T-1 services, is no alternative to DSL for two primary reasons. First, the costs of deploying competitive fiber make it economical only if the target market consists of large business customers in commercial centers, not the residential and small business customers that Covad targets over individual loops.

19. Second, competitive fiber is by no means ubiquitous. For instance, the Joint Petition of BellSouth, SBC, and Verizon effectively admitted that 75% of the commercial buildings in the country were without access to competitive fiber.[9] And that study dealt with large buildings; competitive fiber is not nearly so prevalent in areas that predominantly contain residential and small business customers.

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[8] By contrast, a single SDSL line could carry up to 16 voice lines reliably and with a high quality of service.

[9] *See Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Joint Petition of BellSouth, SBC, and Verizon for Elimination of Mandatory Unbundling of High-Capacity Loops and Dedicated Transport*, Joint Petition, CC Docket No. 96-98, at 11 (stating that only 25% of the nation's commercial buildings are served by a competitive fiber provider).

20. Offering broadband services over wireless networks is not an alternative to DSL for several reasons. First, Covad is not aware of any wireless carriers that have made their broadband services or underlying network facilities available for resale. Similarly, Covad could not be expected to construct a wireless network itself that would replicate the nationwide reach of its existing wireline broadband network. Setting aside the vast capital outlay that would be required (but most likely unavailable in today's market), there is also the problem of obtaining spectrum. As discussed below, it is far from clear what spectrum Covad could obtain and use to provide broadband services.

21. Second, the maximum bandwidth of most wireless networks is nowhere near that of DSL. Certain carriers, such as Winstar and Teligent, created much more powerful wireless networks, but those were targeted at large business customers. And even then, both of those companies drove themselves into bankruptcy pursuing a customer base that is far more lucrative than the residential and small business customers that Covad serves.

22. Third, at present, the cost of adding subscribers to a wireless network is very high compared to DSL. For the most part, this cost difference is attributable to (1) the need to use relatively expensive customer premises equipment for wireless customers; (2) the more intense labor costs associated with installing wireless customers; and (3) the greater amount of engineering work tailored to each customer to ensure acceptable signal strength.

23. Covad is currently in the process of evaluating wireless broadband as a means of augmenting, but not replacing our DSL services. Covad conducted a small wireless trial earlier this year, and additional technical and market trials are planned through the first half of 2005. The data obtained from these trials will give us a better understanding

of the economic and technical issues of wireless deployment. We do not feel that wireless will, however, be a viable replacement for UNE loops such as line shared loops for some time for several reasons:

- CPE cost: At current costs, the customer premises equipment Covad would use to deliver wireless services is only viable for business services, and not appropriate for delivering service to consumers, such as the services Covad currently delivers using line sharing.

- Installation cost and complexity: Our initial trial efforts, in partnership with an existing wireless carrier with considerable installation experience, show that an outdoor, dish-on-the-roof professional installation requires 4-5 times the typical business installation time, and 15-20 times the equivalent consumer self-installation time. This inhibits the number of customers that can be installed in a day, and greatly increases the cost of providing service. In turn, these render the wireless solutions Covad is trialing uneconomic for serving the consumer market. Instead, they render wireless suitable to provide a lower-volume, higher-priced service than Covad provides for businesses today (e.g., 3-5 Mbps to larger businesses, rather than 768 kbps-1.5 Mbps as Covad does today).

- Part 15 license-exempt power restrictions: Current restrictions on power output in Part 15 require a greater density of base stations that increase the cost of deployment over a large, densely-urban area. As a result, a rational business plan calls for deployment in isolated areas, typically serving larger businesses than Covad does business with today, only, and not as a complete overlay in all the areas Covad serves with its existing wireline broadband network.

- License-exempt interference issues: In Covad's estimation, the 2.4 GHz ISM band is already too crowded for carrier-class service to be provisioned with quality that customers will demand. Furthermore, as the market has moved to bundles of voice and data, Covad has continuing concerns as to whether the 5.3 & 5.8 GHz bands will provide service of sufficient quality to provide carrier-grade VoIP services. Determining the quality of service that can be provided over unlicensed spectrum is a major goal of our upcoming wireless trials.

- Cost of licensed spectrum: The auction and post-auction cost of most licensed spectrum requires a business plan for mobile services in which the target market is the number of people in a region, not the number of homes or businesses. Limiting service to a smaller number of fixed locations burdens the product with spectrum costs that greatly exceed the UNE-L loop rates, and make competition with today's landline services practically impossible. Covad believes that viable mobile broadband wireless products are at least 2-3 years away from being ready for deployment.[10] Covad is actively looking

[10] In this connection, the Commission should be mindful that a number of variables could further delay the roll-out of cost-effective, mass market mobile wireless broadband services. In Covad's estimation, the

for partners willing to lease us spectrum, but the reality is that most usable spectrum is held by large parties who view Covad as a competitor. Furthermore, the practical difficulties and inefficiencies inherent in offering service by patching together a number of different, incompatible bands from multiple license holders will likely limit the viability of that strategy.

- Market immaturity: While difficult to quantify the impact on a business plan, Covad believes that the current broadband wireless marketplace (ie., vendor products and provider services) is roughly equivalent to where DSL and cable modem services were 5-6 years ago, with no assurances it will mature along the same trajectory as those services. Consequently, it will be difficult or impossible to rely solely on broadband wireless as a means of competing against entrenched and mature DSL and cable competitors. Therefore, Covad intends to use wireless services to augment, rather than replace, existing UNE-based services. This strategy will allow Covad to adopt wireless as quickly as it matures, without relying solely on an immature technology to compete against well-established, economized, and mature offerings.

24. In short, Covad does see promise in wireless services, but today only for a market segment of businesses that are at the high end of the customers we presently serve. Covad's current experience with wireless alternatives to last-mile local loops is borne out by the Commission's own data as discussed below, which shows that wireless broadband services are their infancy, comprising a miniscule portion of the overall broadband services marketplace.

25. Satellite broadband services are not an alternative to DSL for four reasons. First, most such services are not two-way. While satellite dishes to receive programming are small enough (18" in diameter) to be ubiquitous, they are too small to send data back to the satellite. Most satellite services must use telephone lines to provide two-way communications, which severely limits upstream bandwidth. The few services that do offer two-way communications through the dish itself have very low upstream speeds. Consequently, satellite broadband service is either purely a residential product (because it

IEEE 802.16e standard may become available first, with equipment available starting in mid to late 2006, if current attempts to derail the standard are not successful. The IEEE 802.20 standard has already been

provides significant bandwidth only for downloading) or a small business product only when coupled with a high capacity telephone line for uploading (which essentially would be DSL).

26. Second, the performance of satellite-based communications suffers from the delay caused by the distance that the signal must travel. These services typically use geostationary satellites that orbit over 22,000 miles above the equator. The time that it takes signals to cover that distance, even in one direction, prevents many applications from working properly. In addition, since the satellites orbit above the equator, subscribers in North America must be able to place their dish in position to have a clear view of the southern sky.

27. Third, satellite broadband platforms cannot offer both broadband *and* voice services to end users. There is simply too much delay in having the voice signal travel to and from a satellite for such carriers to provide high quality voice services. Although there are satellite telephones available to end users, they use lower orbiting satellites that then lack the capability to offer broadband service.

28. Fourth, even if the technical problems with satellite broadband service did not exist, the fact remains that satellite services are typically priced well-above mass market broadband services like DSL over line sharing.[11] Thus, satellite broadband services occupy at best a small niche in the overall broadband services marketplace.

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effectively derailed within the political process of the IEEE by companies feeling threatened by a viable alternative to cellular-like 3G data offerings.

[11] For example, Hughes Network Systems' Direcway residential 500kbps service currently retails – at promotional pricing – for $99.99 per month. *See* http://hns.getdway.com/home_service.html. By contrast, Covad's lowest-priced retail residential DSL service offers a higher 1.5 Mbps download speed for only $39.95 per month. *See* http://www.covad.com/residential/telesurferplus/index.shtml.

29. In fact, neither satellite broadband, fixed wireless nor broadband over powerline services represent serious competitive threats to the Bell companies' broadband DSL services, and are unlikely to provide such a threat on any significant scale for a long time. Satellite broadband services cost significantly more than commonly available DSL and cable modem services, and have to date attracted few subscribers.[12] Fixed wireless has so far proven to be an unsuccessful entry platform, with larger providers like AT&T, Winstar and Teligent having exited the fixed wireless business or simply gone out of business.[13] Not surprisingly, according to the FCC's latest data, satellite and fixed wireless broadband together account for less than 2% of total high-speed lines in service.[14] And broadband over powerline remains in its infancy, with hardly any commercial deployment and an uncertain future.[15] The Commission's data confirms that the incumbent telephone companies and cable providers control more than 93% of the nation's broadband access lines.[16]

b. Lack of Alternative Intramodal Platforms

30. Covad's ability to continue providing broadband services using intramodal alternatives has also been jeopardized by recent events in the marketplace. Indeed, after

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[12] *See, e.g.*, Ex Parte Letter from David Lawson, AT&T, to Marlene Dortch, FCC, at 8-9 (filed in WC Docket No. 01-338, April 15, 2004).

[13] *See* Letter from Praveen Goyal, Covad Communications, to Marlene Dortch, FCC, Attachment at 15 (filed in WC Docket No. 01-338, Nov. 15, 2002).

[14] *See High-Speed Services for Internet Access:Status as of December 31, 2003*, Industry Analysis and Technology Division of the Wireline Competition Bureau, Federal Communications Commission, at Table 1 (June 2004).

[15] Indeed, even Verizon has conceded that broadband over powerline is available commercially only on a limited trial basis in two discrete locations, and it is not clear whether these trials have actually attracted any customers. *See* Ex Parte Letter from David Lawson, AT&T, to Marlene Dortch, FCC, at n. 41 (filed in WC Docket No. 01-338, April 15, 2004).

[16] *See High-Speed Services for Internet Access:Status as of December 31, 2003*, Industry Analysis and Technology Division of the Wireline Competition Bureau, Federal Communications Commission, at Tables 1, 5 (June 2004).. Specifically, out of a total of 28,230,149 high-speed lines (over 200kbps in at least one direction), RBOCs served 8,735,814 lines, other ILECs served 1,261,641 lines, and cable providers served 16,446,322 lines.

the Commission announced its decision to phase out line sharing, Covad moved aggressively to partner with competitive voice providers to assemble bundles of competitive UNE-P voice with Covad's broadband services. Since the Commission's *Triennial Review Order*, Covad announced strategic partnerships with 8 competitive UNE-P voice providers to provide bundles of voice and data using line-splitting.[17] Covad's strategic partnerships included deals with the largest nationwide UNE-P voice competitors including AT&T, MCI, and Z-Tel. Indeed, the Commission expressly took note of Covad's line-splitting partnership with AT&T in its decision to phase out line sharing in the *Triennial Review Order*.[18] After the *Triennial* decision, Covad itself deemed line-splitting with UNE-P as a viable business model for the continued provision of broadband services to the mass market, by maintaining "Covad's ability to continue bundling our data services with the voice products of our strategic partners."[19]

31. Unfortunately, subsequent events have shown that line-splitting will not remain viable as a long-term business model for providing broadband services to the mass market. It is clear now that a number of Covad's most significant strategic partners for line-splitting are abandoning the market for consumer services utilizing UNE-P. Recently, AT&T announced its intent to withdraw from the consumer voice market.[20] According to published reports, "MCI has quietly taken similar steps and is no longer competing in the residential business."[21] Z-Tel similarly recently announced its

[17] *See* http://www.covad.com/companyinfo/pressroom/index.shtml (Covad press releases from 2003-2004).
[18] *See Triennial Review Order* at ¶¶ 258-261.
[19] *See* "Ruling Does Not Affect Majority of Covad's 2002 Recurring Revenues," Press Release, Feb. 14, 2003, available at http://www.covad.com/companyinfo/pressroom/pr_2003/022003_press.shtml.
[20] *See* "AT&T Announces Second-Quarter 2004 Earnings, Company to Stop Investing in Traditional Consumer Services; Concentrate Efforts on Business Markets," News Release, July 22, 2004, available at http://www.att.com/news/item/0,1847,13163,00.html.
[21] *See* "MCI Hires Advisors for Likely Sale Bid," Washington Post [business section], page E01, Sept. 21, 2004 (available at http://www.washingtonpost.com/wp-dyn/articles/A36879-2004Sep20.html).

withdrawal from the provision of UNE-P services, citing the "elimination of UNEP as a working economic business model in early 2005."[22] In Covad's experience, most telecommunications industry observers today predict that voice services based on UNE-P will soon disappear as a viable business. As one analyst recently wrote:

> UNE-P has come full circle. We now believe the Bells will begin to see the effects of the Big IXCs' exit from the consumer business in 2H04... With 17M UNE-P lines and estimated monthly blended churn of roughly 5%, the Bells should see wholesale lines fall by roughly 8M in the first twelve months after competitors stop marketing. We believe FCC's new interim rules will make this a reality in 2005. Meanwhile, we think the Bells should recapture at least 80% of these lines, more than offsetting recent retail losses.[23]

According to the same analyst, "While the Bells will continue to lose lines to smaller carriers such as TalkAmerica, Sage and Granite, the sheer size of the IXCs' base makes us believe that the Bells will stop losing residential lines to UNE-P based competition on a net basis in 2005, two years earlier than we previously expected."[24] Based on these developments, Covad does not expect its volumes of line-splitting lines added to grow to the levels its line shared DSL services have reached. Instead, although Covad presently continues to add line-splitting lines to its network in the short-term, it expects that growth will reach an inflection point after the Bells cease losing residential lines to UNE-P based competitors on a net basis as described above. Once that happens, Covad expects its line-splitting line growth to plateau, and subsequently begin to recede as then existing customers eventually churn off of UNE-P. Without the long-term availability of line-splitting over UNE-P, Covad does not presently have any practicable long-term

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[22] *See* "Z-Tel Announces Second Quarter Financial Results," Press Release, Aug. 9, 2004, available at http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=ztel&script=410&layout=-6&item_id=602427.
[23] *See* UBS Warburg, Telco Wake Up Call, "Upgrading the Bells to Buy 1: UNE-P Comes Full Circle," Hodulik, John, Aug. 4, 2004.
[24] *See* UBS Warburg, Telco Wake Up Call, "Quarterly Preview and Update on Bell Margins," Hodulik, John, Aug. 9, 2004.

intramodal alternatives to line sharing as a means of providing mass market broadband services.

c. Pricing for the High Frequency Portion of the Loop

32. According to the Commission's *Triennial Review Decision*, difficulties in developing cost-based pricing for the high-frequency portion of the loop contributed to the Commission's decision to phase out line sharing. In this portion of the declaration, Covad discusses one suggestion for an alternative means of pricing the high-frequency portion of the loop that is substantially different than the means previously employed by the Commission's line sharing rules.

33. The Commission's previous rules for allocating loop costs to line sharing used the ILECs' loop costs attributed to their own tariffed line sharing products as a proxy for the ILECs' costs in providing the high frequency portion of the loop to CLECs. One advantage of this rule was that it placed ILECs and CLECs on an equal competitive footing, and prevented the ILECs from artificially recovering greater loop costs from the end users of line shared DSL services than from their own end users.

34. If the Commission decided, however, that instead of relying on ILECs' historical loop cost allocation it would adopt an alternative means of determining the high frequency loop cost, the Commission could devise a rule that used the loop costs established through commercially negotiated agreements for line sharing as a proxy for a line sharing loop cost rate. Because both parties to the agreement evaluated the loop pricing from a perspective of market pricing sensitivity, the negotiated price appears to balance both parties' respective views on adequate cost and cost recovery. The

Commission could determine that such a proxy could reasonably be used as a predictor of the forward-looking costs of the high-frequency portion of the loop in an efficient market.

35. In April 2004, Covad and Qwest entered into a commercial line sharing agreement that allows Covad to purchase line sharing lines across the Qwest region for the duration of three years. This agreement constitutes the first, and only, time a competitive communications carrier and a regional Bell operating company have negotiated commercial terms for access to line sharing since the Federal Communications Commission's (FCC) Triennial Review decision. Following the announcement of the agreement, Covad stated that the "agreement demonstrates that the economics of line sharing are beneficial to both parties and that commercial agreements can be negotiated for this service." In addition, according to Covad, "The pricing of this agreement enables Covad to aggressively compete for line-sharing customers in the Qwest region and is consistent with our business plan."[25]

36. Covad has performed an analysis of its commercial line sharing agreement with Qwest Communications to determine what such a proxy would be. According to Covad's determination, the forward-looking recurring cost-based rate for the high-frequency portion of the loop should be 11% of the recurring cost-based rate for a standalone loop in the same rate zone. Covad performed its calculations as follows.

37. First, Covad examined its recurring rates for line shared loops in the Qwest region. At historical volumes, and expected volumes if line sharing is reinstated, Covad expects to pay a $5 recurring rate for purchasing line shared loops from Qwest across the entire Qwest footprint. Some of this rate consists of loop cost; however, some portion of

[25] *See* "Covad and Qwest Sign Commercial Line-sharing Agreement," Press Release, April 15, 2004 (available at http://www.covad.com/companyinfo/pressroom/pr_2004/041504_news.shtml).

this rate also reflects the cost of developing Qwest's OSS interfaces to permit line sharing ordering.

38. In order to back-out the portion of the negotiated recurring rate attributable to OSS costs, Covad examined rates for OSS costs in states within the Qwest region. Notably, the $5 recurring region-wide rate was the result of a commercially negotiated agreement, rather than a state UNE proceeding establishing TELRIC rates. Thus, in order to generate an apples-to-apples comparison, Covad used Qwest's proposed recurring rates for OSS access in states where such rates were available. Based on Qwest's proposed rates, and based on Covad's current volumes of total line shared lines in service, the weighted average recurring rate for OSS costs in the Qwest region was calculated at $3.38 per month.

39. When backed-out of the $5 recurring rate established in the Qwest agreement, this resulted in a region-wide recurring rate of $1.62 attributable to the high frequency portion of the loop. The next step was to compare this rate to the standalone loop rates in effect across the Qwest footprint. Covad established the weighted average recurring rate of standalone loops across the Qwest region by examining its total standalone loops in service and standalone loop rates in effect across the Qwest region based on the current zone distribution of its standalone loops in service. Based on Covad's current volumes of standalone loops as distributed among the various zones in each state, the weighted average recurring rate for standalone loop costs was calculated at $15.16 per month.

The $1.62 recurring rate for the high frequency portion of the loop divided by the $15.16 weighted average recurring rate for standalone loops resulted in a percentage attributable to recurring HFPL costs of 11%.[26] The detail for Covad's calculations is as follows:

*** BEGIN CONFIDENTIAL ***

*** END CONFIDENTIAL ***

It is reasonable to conclude that Qwest believed this deal more than sufficient to cover its forward looking costs or it would not have negotiated it. The deal therefore sets an outer limit on what those costs must be.

The Commission therefore cannot rely on pricing issues to deny CLECs access to line sharing. Nor is there any other reason to do so. As explained above, line sharing enables CLECs like Covad to provide broadband service to consumers who would otherwise have no alternatives or dramatically inferior alternatives. The Commission should enable CLECs to continue using line sharing to provide innovative broadband service using their facilities-based networks.

VI. DS-1 Loops

40. In addition to providing mass market broadband services using line sharing, Covad provides DS-1 service to somewhat business customers. DS-1 loops can be either ordinary copper loops with DS-1 electronics installed along the loop or fiber loops with

[26] Covad notes that this calculation is provided solely for the purpose of helping the Commission evaluate the portion of Covad's recurring rate to Qwest that is reasonably attributable to loop cost, and how this loop cost compares to the prices for standalone loops in the Qwest region. This analysis is provided for informational purposes only. Regardless of this analysis or how the Commission chooses to use it, Covad will remain bound by the terms of its agreement with Qwest to continue ordering line sharing from Qwest per the terms of their agreement during its entire duration, including the recurring rates included therein.

electronics installed at the customer's premise and the central office. DS-1 loops provide a reliable symmetric connection operating at 1.544 mbps.

41. There are no alternatives to DS-1 loops that could eliminate the need for an unbundling obligation. The various technologies discussed above (cable, fiber, wireless, satellite and broadband over powerline) are even less appropriate substitutes for DS-1 loops, which are highly reliable, high-capacity facilities. Indeed, in Covad's experience, even the most often cited example of data competition to the Bells' mass market broadband services – namely cable modem services – barely registers in the enterprise service markets where DS-1 loops are employed. Cable television networks have historically been deployed in primarily residential areas to serve residential consumers. In fact, most businesses have only the incumbent telephone company as their only broadband option. Even for smaller businesses likelier to be passed by cable facilities, recent figures show that cable penetration has actually dropped: "We projected cable modem would surpass DSL in this [the small business] segment by year-end 2003. However, cable modem penetration *dropped precipitously* in the small business market, or businesses with between 20 and 99 people. Cable operators also achieved limited success in the remote office market, reaching only 4.2 percent of the market in 2003."[27] As the Yankee Group now recognizes, "*DSL operators dominate* the U.S. [small business] broadband and enterprise remote-office broadband market."[28]

[27] Yankee Group, *Cable and DSL Battle for Broadband Dominance* (February 2004), at 4-5 (emphasis added).
[28] *Id.* at 4 (emphasis added).

42. It is worth explaining why standard DSL loops are not an alternative for DS-1 loops.[29] First, DSL can deliver similar bandwidth to DS1 loops only over relatively short distances (approximately 8,000 feet from the central office).[30] DS-1 loops are designed to overcome the distance limitations of DSL by making use of technologies such as repeaters and fiber optics. DS-1 loop designers deploy the most appropriate technology based upon the distance of the end user from the central office as well as knowledge of the make-up and design details of the loop plant that serves the end user.

43. Second, because DS-1 loops are specially designed to be suitable for carrying DS-1 signals, they tend to be more reliable[31] and come with tighter time-to-restore targets. While DSL is generally a reliable technology, it typically runs on copper loops that are not specifically engineered to the specifications of the technology that they will carry. Therefore, it is less certain that a given DSL loop will be suitable for the service that will ultimately run over it. Interestingly, many end users who buy DS-1 service from Covad seek in the first instance to purchase DSL service (because it is much cheaper), but are unable to do so because of technical limitations on DSL that DS-1 service overcomes.

44. Covad has not self-deployed DS-1 loops in its network. Instead, Covad relies exclusively on ILEC loop facilities to provide its DS-1 services. Covad generally purchases such loops as UNEs, and in the long run almost always relies on UNE DS-1 loops. But Covad has often been forced into initially purchasing DS-1 loops as special access circuits because ILEC litigation positions and self-help preclude access to UNEs.

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[29] In fact, Verizon Communications has previously admitted that SDSL and T-1 services are very different. *See* letter of Michael E. Glover & Karen Zacharia (of Verizon) and Michael Olsen & William J. Bailey, III (of NorthPoint) to Jake Jennings, Deputy Division Chief, at 2 (filed in CC Docket No. 00-157, August 31, 2000).

[30] *See id.* ("whereas a T-1 line runs at a constant bandwidth of 1.544 Mbps, and SDSL line can run at that speed only at short distances from the central office").

In other situations, ILECs have made the purchase of special access a prerequisite to UNEs, a factor which could skew the special access-to-UNE ratio higher. Until the Commission's decision in the *Triennial Review Order* to invalidate the "no facilities" policies of various ILECs,[32] Covad was routinely forced to obtain DS-1 loop UNEs by first ordering them as tariffed special access circuits and later converting them to UNEs. Indeed, even to this date, Verizon continues to impose minimum monthly service commitments on all special access circuits so that CLECs must wait a minimum of 90 days before converting a DS-1 circuit to UNE pricing. In Covad's experience, nearly half of the DS-1 UNE loops it seeks to obtain from Verizon must first be ordered as special access circuits, and later converted to UNEs. But even when Covad is forced to initially order DS-1 loops as special access circuits, it converts them to UNEs as soon as it is able. It is almost never the case that Covad does – or would – order a DS-1 special access circuit that could not be converted to a UNE, as it would not be economically viable to pay special access prices for more than a short initial period.

45. Notwithstanding these circumstances when Covad is forced to first obtain DS-1 loop UNEs as special access circuits, it is clear that Covad could not profitably provide DS-1 services to business customers if forced to purchase all of its DS-1 loops as special access circuits. In Covad's experience, special access pricing for DS-1 loops ranges from approximately 150 to 250 percent higher than UNE DS-1 pricing for the same loops. Moreover, as a CLEC serving the small business and consumer markets, Covad does not require the volume of circuits that would render it eligible for the special access volume discounts typically obtained by larger carriers serving the enterprise market. Without the

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[31] *See id.* (T-1 lines are "technically more robust" than SDSL lines, "are not limited by loop length from the central office and can be ordered for a long haul circuit of hundreds of miles").

ability to obtain such discounts, Covad would be forced into purchasing special access at the base tariff rates, which, as discussed, would roughly double Covad's costs for purchasing high capacity loops. Covad just became EBITDA profitable for the first time in the fourth quarter of 2003 and cash-flow positive for the first time in the second quarter of 2004.[33] It is clear that an increase of Covad's per unit costs for obtaining DS-1 loop UNEs of approximately 150 to 250 percent would greatly impede Covad's ability to continue onward towards profitability. If Covad's per unit costs for obtaining DS-1 loops were raised by such an amount, Covad would most likely be forced to exit from the provision of DS-1 services.

VII. Dedicated Interoffice Transport

46. Although competitive transport is not ubiquitously available, where it is available, it is expensive. CLECs providing competitive transport are typically competing with the ILEC's special access services (where both ILECs and CLECs seek to serve end users on a retail basis, not telecommunications carriers on a wholesale basis). For that reason, in Covad's experience, competitive transport providers price their services typically at approximately a 20% discount from the ILEC's special access services, which itself is generally more than twice the UNE rate. This pricing thus places Covad's costs to obtain dedicated transport substantially above the ILECs' own costs, placing Covad at a severe competitive disadvantage. In Covad's experience, the extent to which the pricing of wholesale alternative transport facilities becomes competitive with

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[32] *See Triennial Review Order* at paras. 630-641.

[33] *See* "Covad Communications Group Announces Fourth Quarter 2003 Results," Press Release, Feb. 18, 2004, available at http://www.covad.com/companyinfo/pressroom/pr_2004/021804_news.shtml (announcing EBITDA profitability); "Covad Communications Group Announces Second Quarter 2004 Results," Press Release, July 27, 2004, available at

ILEC UNE dedicated transport facilities correlates with the number of wholesale alternative providers present on a given route.

47. Furthermore, in Covad's experience, wholesale transport alternatives to the ILECs' dedicated interoffice transport facilities are not available across Covad's nationwide footprint. Where such alternatives exist, they tend to be concentrated in highly urban, dense business markets with sufficient revenue opportunities to attract multiple fiber-based competitive entrants. Even within such areas, competitive fiber-based entrants do not ubiquitously convert their fiber deployments (typically deployed to serve large enterprise end user customers) to serve as substitutes for dedicated interoffice transport facilities between ILEC central offices. Covad's experience is borne out by the data that to date have been developed by the state commissions examining ILEC-submitted data on the number of alternative wholesale dedicated transport providers present on specific routes. The results of the QSI study support Covad's experiences. In the 12 states for which QSI reviewed data, it found that the self-provisioning trigger was met for only 55 routes for DS3 transport and for only 46 routes for dark fiber . See QSI Report at 17-18. It found that the wholesale trigger for DS3 transport on only 40 routes and on no routes for dark fiber transport. *See id.* at 19-20. In contrast to this relatively small number of routes, Covad relies on UNE dedicated transport to route traffic between collocations in nearly 2000 central offices across the nation. Thus, as the results of the QSI study show, the Commission's self-provisioning trigger was met in a very small fraction of the total number of routes on which Covad purchases UNE dedicated transport.

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http://www.covad.com/companyinfo/pressroom/pr_2004/072704a_news.shtml (announcing cash-flow positive results).

48. Covad could not build its own transport facilities because it lacks both the expertise and the capital. Covad does not have the employees necessary to dig up the streets and lay fiber. Even if it did, Covad does not have the capital necessary for such operations, nor could it obtain that kind of money in today's market. As discussed below, however, where its traffic volumes on a specific route reach sufficient levels, it can become economical for Covad to deploy its own optronics to existing available wholesale dark fiber facilities to self-provision DS-3 transport circuits. Until and unless Covad's transport needs reach this threshold on a particular route, self-deployment of transport even over dark fiber would remain uneconomic, as detailed below.

49. Today, most transport and digital loop carrier runs over fiber facilities and uses Synchronous Optical Network ("SONET") electronics. SONET is merely "an optical interface standard" by which manufacturers build all kinds of equipment – everything from digital loop carrier to common and dedicated interoffice transport.[34] The facilities are then in turn typically channelized to provide multiple lower capacity circuits, such as DS-3 circuits and DS-1 circuits, riding over the same SONET fiber transmission facilities.

50. Thus, when Covad purchases DS-3 transport facilities from the ILEC, those facilities are provisioned over the ILEC's SONET fiber transmission facilities. At low volumes of traffic, the unavailability of scale economies in deploying transport facilities, the high sunk and fixed costs of deploying such facilities, and the inability to obtain access to rights-of-way work to render the self-provisioning of individual DS-3 transport circuits uneconomical. At higher volumes of traffic, as Covad's needs for multiple DS-3 circuits on a route grows, these economics change, particularly with respect to the sunk

and fixed costs of deploying optronics on existing, available dark fiber facilities. In Covad's experience, the costs of self-provisioning transport over dark fiber facilities includes the costs of obtaining an IRU agreement for the dark fiber facilities, the capital costs for SONET add drop multiplexers and the capital costs for test equipment. In addition, Covad must incur the costs of obtaining cross-connects of sufficient capacity to service its existing collocations. On average, Covad has found that these deployments require a total of 8 months from planning to deployment, at a cost of approximately $200 thousand per site (averaged out over multiple ring sites per deployment). Due to difficulties in obtaining access to the ILECs' dark fiber, Covad has obtained dark fiber from alternative wholesale providers in the few instances it has undertaken such deployments. In Covad's experience, the high sunk and fixed costs required for these deployments became economical where Covad's DS-3 usage on a given route exceed a threshold of 12 DS3s on that specific route.

51. Covad's business practice is to purchase ILEC UNE dedicated transport to provide dedicated interoffice transport links, rather than special access. In Covad's experience, special access pricing for dedicated interoffice transport is generally more than twice the pricing for the same circuits ordered as UNE dedicated transport. In individual cases, the pricing can be significantly higher. For example, in the New York MSA, the monthly recurring rate for special access DS-1 transport is approximately 400% higher than the rate for UNE DS-1 transport, and the monthly recurring rate for special access DS-3 transport is more than 230% higher than the rate for UNE DS-3 transport. Moreover, as a CLEC serving the small business and consumer markets, Covad does not require the volume of circuits that would render it eligible for the special

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[34] *See* Newton's Telecom Dictionary, at 663-64 (14th Ed. 1998).

access volume discounts typically obtained by larger carriers serving the enterprise market. Without the ability to obtain such discounts, Covad would be forced into purchasing special access at the base tariff rates, which, as discussed, would roughly double Covad's transport costs.

52. As is the case for special access DS-1 loop rates, it is clear that Covad could not profitably provide DS-1 services to business customers if forced to purchase its dedicated transport facilities as special access circuits. As explained previously, Covad just became EBITDA profitable for the first time in the fourth quarter of 2003 and cash-flow positive for the first time in the second quarter of 2004.[35] It is clear that an increase of Covad's costs for obtaining dedicated transport of approximately 200 percent would greatly impede Covad's ability to continue onward towards profitability. If Covad's costs for obtaining dedicated transport were raised by such an amount, Covad would most likely be forced to cease providing service to the vast majority, if not all, of its customers.

VIII. Covad's Facilities-Based VoIP Services

53. By controlling its own broadband facilities, Covad is able to control the quality of service it provides to its customers, and introduce these innovative features that are both software and network based. At a technical level, Covad's control over its network based facilities allows it to use packet prioritization techniques to ensure that voice quality is maintained even as a user downloads large files or watches streaming media. Such techniques are unavailable to providers like Vonage or AT&T that must

[35] *See* "Covad Communications Group Announces Fourth Quarter 2003 Results," Press Release, Feb. 18, 2004, available at http://www.covad.com/companyinfo/pressroom/pr_2004/021804_news.shtml (announcing EBITDA profitability); "Covad Communications Group Announces Second Quarter 2004 Results," Press Release, July 27, 2004, available at

rely on other's networks. VoIP call quality is sensitive to packet latency, jitter and loss. In order to provide VoIP services over its packet-based broadband transmission facilities, Covad uses a VoIP Optimized Access (VOA) solution designed to optimize all three parameters throughout the Covad network, from the access line through the ATM edge network to the IP core. This is accomplished by segregating voice and data traffic, and prioritizing voice packets over data packets.

54. Since Covad uses ATM on the access line and the core network, it is able to segregate voice and data traffic into separate Permanent Virtual Circuits (PVCs). Voice PVCs are classified as Variable Bit Rate-Real Time (VBR-RT) traffic, which is given higher priority than data PVCs which are classified as Available Bit Rate (ABR) traffic. As a facilities-based provider, Covad is also able to segregate voice and data on the IP layer at its collocation facilities. Covad accomplishes this by using a voice virtual router (VR) at the B-RAS and separate physical connections to the gateway router at each IP-POP.

55. Another consequence of these traffic segregation mechanisms is that Covad is able to protect its voice services from attacks originating from the Internet. This is done through effective use of Access Control Lists (ACLs) in the gateway router. Also, denial of service (DOS) attacks on the data infrastructure have no impact on Covad's voice service since the voice service has strict priority over data.

56. Although the ILECs are technically capable of providing a service similar to Covad's VOA, they have not done so. For example, Verizon's VoiceWing service uses a telephone adapter connected to a standard DSL router or cable modem, without any

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http://www.covad.com/companyinfo/pressroom/pr_2004/072704a_news.shtml (announcing cash-flow positive results).

prioritization for voice on their network. This results in higher packet loss and jitter, and therefore inferior voice quality, compared to VOA. Their voice services are also vulnerable to DOS attacks, just like their data services.

57. This concludes our declaration.

I declare under penalty of perjury that the foregoing is true and correct. Executed on Oct. 4, 2004.

Stephan DeRodeff

I declare under penalty of perjury that the foregoing is true and correct. Executed on Oct. 4, 2004.

Patrick Bennett

I declare under penalty of perjury that the foregoing is true and correct. Executed on Oct. 4, 2004.

Mark Richman

Mark Richman